

**COMMONWEALTH OF MASSACHUSETTS  
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY**

**FIRST SET OF INFORMATION REQUESTS TO  
THE BERKSHIRE GAS COMPANY  
D.T.E. 05-7**

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Pursuant to 220 C.M.R. § 1.06(6)(c), the Department of Telecommunications and Energy (“Department”) submits to The Berkshire Company (“Berkshire” or “Company”) the following Information Requests:

**INSTRUCTIONS**

1. Each request should be answered in writing on a separate, three-hole punch page with a recitation of the request, a reference to the request number, the docket number of the case and the name of the person responsible for the answer.
2. Do not wait for all answers to be completed before supplying answers. Provide the answers as they are completed. Further, these requests shall be deemed continuing so as to require further supplemental responses if the or its witness receives or generates additional information within the scope of these requests between the time of the original response and the close of the record in this proceeding.
3. The term “provide complete and detailed documentation” means:  
  
Provide all data, assumptions and calculations relied upon. Provide the source of and basis for all data and assumptions employed. Include all studies, reports and planning documents from which data, estimates or assumptions were drawn and support for how the data or assumptions were used in developing the projections or estimates. Provide and explain all supporting work-papers.
4. The term “document” is used in its broadest sense and includes, without limitation, writings, drawings, graphs, charts, photographs, phono-records, microfilm, microfiche, computer printouts, correspondence, handwritten notes, records or reports, bills, checks, articles from journals or other sources and other data compilations from which information can be obtained and all copies of such documents that bear notations or other markings that differentiate such copies from the original.
5. If any one of these requests is ambiguous, notify the Hearing Officer so that the request may be clarified prior to the preparation of a written response.

6. Please serve copies of the responses as follows: one (1) copy of the responses to Mary Cottrell, Secretary of the Department and on all parties; one (1) copy of the responses to Michael Killion, Hearing Officer, on three-hole punch paper; three (3) copies of the responses to Andréas Thanos, Gas Division.

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**INFORMATION REQUESTS**

- DTE-1-1 Please discuss why the Company filed on January 31, 2005 a Forecast and Supply Plan that covers a five-year period beginning on November 1, 2004. Did the Company consider filing a plan for the period beginning November 1, 2005? If yes, please indicate what factors influenced the Company's decision. If not, please discuss why not.
- DTE-1-2 Please refer to pages 6-7 of the Company's filing. How would the Company evaluate its marketing programs? Please, indicate which of the programs have been more successful in terms of increase in the number of customers and increase in sales or transportation volumes.
- DTE-1-3 Please provide a list of incentives that the Company offers customers to convert from non-heating to heating gas service.
- DTE-1-4 Please refer to page 7 of the Company's filing. One of the Company's primary marketing programs includes the incentives for existing non-heating service customers to add central heating to their homes or businesses. The Company states that these marketing efforts have already secured substantial benefits for customers. In this regard, please:
- (a) discuss how long the Company has been offering the incentives in its service territory;
  - (b) quantify the benefits generated by the Company's marketing efforts;
  - (c) provide the number of customers who converted from non-heating to heating by class and their additions of sales or transportation volumes up to 2004; and
  - (d) provide the projected number of customers (converting from non-heating to heating service) and their corresponding volumes for the forecast period.
- DTE-1-5 Please refer to page 12 of the Company's filing. It states that the Company provided ten years of historical monthly sales data (from July 1994 to June 2004) for each customer class for the forecast analysis. Please discuss fully the reason(s) for selecting ten years and not a longer time series to forecast future trends in gas sales (e.g., justify why the historical time series starts in 1994 and not before).

- DTE-1-6 Please refer to page 12 of the Company's filing. The Company states that the econometric models inherently capture the load reductions resulting from the various conservation measures installed. In this regard, please state what explanatory variables are used by the Company to capture the reductions in load from the implementation of the DSM measures.
- DTE-1-7 Please provide the percentage of every customer class's throughput over the total Company's throughput for the historical period and over the forecast period and at an annual basis.
- DTE-1-8 Please refer to pages 20-21 of the Company's filing. The Company states that it determines the amount of gas to be scheduled by suppliers for their non-daily metered pools. In this regard, please:
- (a) explain the relationship or links (if any) between the forecast of the non-daily metered pools and the forecast presented in the current Company's filing. How is the forecast of the non-daily metered pools used in the long-run forecast and supply plan?
  - (b) explain the method used by the Company to forecast load of non-daily metered pools; and
  - (c) explain the differences between the following forecasting methods: (i) the method used to forecast design day and design year demand and (ii) the method used to forecast non-daily metered pools.
- DTE-1-9 Please refer to page 5 of the Company's Supplemental Volume I. It states that economic and demographic indicators were collected for forecasting purposes from the Pittsfield region (e.g., personal income, employment, GDP, households and population). Please discuss the correspondence of the Pittsfield region with the Company's overall service territory.
- DTE-1-10 Please refer to page 9 of the Company's Supplemental Volume I. The Company states that historical and forecasted data were obtained for Berkshire County, which represents the bulk of the Company's service territory. The Company further states that while a small portion of Berkshire's customers are located in Franklin and Hampshire counties, previous analysis conducted by AEG in 2002 found these counties to be comparable to Berkshire County and it was decided not to develop a weighted variable set. In this regard, please:
- (a) provide the analysis conducted by AEG in 2002; and
  - (b) provide the number of customers (and their loads) located in Franklin and Hampshire counties in proportion to the Company's total number of customers (Company's total load).

- DTE-1-11 Please clarify the source of the historical economic and demographic indicators:  
(a) are they from the Pittsfield region (see page 5 of the Company's Supplemental Volume I) or (b) Berkshire County (see page 9 of the Company's Supplemental Volume I).
- DTE-1-12 Please refer to page 11 of the Company's Supplemental Volume I. Please explain the following sentence: "The use of Albany wind speed data adds some level of inaccuracy to the EDD variable"
- DTE-1-13 Please refer to page 11 of the Company's Supplemental Volume I. The Company states that HDD was used in all the monthly use per customer models and that little, if any, benefit could be obtained by substituting EDD for HDD. In this regard, please:
- (a) specify whether or not the Company used HDD for forecasting sales under design weather conditions (design year, design day and the cold snap);
  - (b) explain the meaning of the following statement: 'little, if any, benefit could be obtained by substituting EDD for HDD';
  - (c) explain and justify why the use of HDD instead of EDD will not affect the forecast of use per customer; and
  - (d) present the monthly time series data of both HDDs and EDDs variables from July 1994 through June 2004 and by customer class. Please present a schedule showing the degree of statistical relationship between both variables.
- DTE-1-14 Please refer to page 11 of the Company's Supplemental Volume I. The Company states that monthly sales are much less affected by wind speed as compared to daily peak or cold snaps. In this regard, please explain:
- (a) does the Company imply that monthly sales are, in fact, affected by wind speed?
  - (b) when does the Company believe it would be more appropriate to use a EDD variable instead of an HDD variable?
- DTE-1-15 Please refer to the following regression equations presented in the Company's Supplemental Volume I: Firm Sales Models (see pages 12, 14, 16, 18, 20, 23, 26, 29, 32 and 35), Throughput Models (see pages 40-51) and Number of Customer Models (see pages 41, 43, 44, 46 and 49). In this regard, please:
- (a) specify the underlying assumption(s) of the method(s) used in the estimation of the equations and explain how the Company tested these assumption(s) to be sure that none are violated. Please provide evidence to support your answer;
  - (b) specify which tests were performed in the regression equations to detect heteroskedasticity. Please provide evidence in support of your answer; and
  - (c) if applicable, perform a test for heteroskedasticity for each of the above

mentioned models. Please, specify the null and alternative hypotheses, degrees of freedom, number of observations and the critical values.

- DTE-1-16 Please refer to page 12 of the Company's Supplemental Volume I. Please discuss the rationale for including the weather variable to explain the residential non-heating use per customer.
- DTE-1-17 Please refer to page 13 of the Company's Supplemental Volume I. The Company states that the relatively low R-square is not uncommon for classes of customers that are not very weather sensitive. In this regard, please explain why the Company used HDD as an explanatory variable to model the use per customer of residential general when this class of customers is not very weather sensitive. Has the Company considered other variables? Which ones?
- DTE-1-18 Please refer to Attachment 2 of the Company's Supplemental Volume I. Please explain why the residential non-heating sales are greater in the non-heating season than in the heating season.
- DTE-1-19 Please refer to page 12 of the Company's Supplemental Volume I. Please interpret the twelve-month autoregressive term. What is the rationale behind that variable?
- DTE-1-20 Please refer to page 13 of the Company's Supplemental Volume I. The Company states that none of the models were able to capture the effect of the Company's gas heating marketing initiative, which has been in place since 2000. The final model selected only used the most recent 36 months of history. In this regards, please:
- (a) explain why the Company decided to use a shorter time series and not all the information available;
  - (b) specify the year and month used by the Company to model the number of residential general customers; and
  - (c) explain why when using the multiplicative Winters forecasting technique, the Company only considered the last 36 months of the historical time series.
- DTE-1-21 Please refer to Attachment B of the Company's Supplemental Volume 1. Please discuss the drop in annual residential heating sales in the years 2001/2002.

- DTE-1-22 Please refer to page 14 of the Company's filing. It states that more recently, the price elasticity of demand appears to have played a role in the declining use per residential heating customer. In this regard, does the Company have an estimate of the price elasticity of residential demand for gas? Discuss how the elasticity of demand for gas has played a role in the declining use per residential heating customer.
- DTE-1-23 Please refer to pages 17-18 of the Company's Supplemental Volume I. Regarding the residential space heating (number of customers) forecast, please specify the order of the ARIMA process selected by the Company (e.g., order of the autoregressive dimension of the model, times the dependable variable was differentiated, and order of the moving average dimension of the model). Please explain the meaning of b[1], A[12], and B[12].
- DTE-1-24 Please refer to Page 12 of the Company's filing. Regarding the forecast of use per residential heating customer, the Company states that it believes that the market for traditional DSM programs is nearly saturated and has reflected this determination in the forecast period. In this regard, please:
- (a) explain how the Company has reflected this determination in the forecast period;
  - (b) explain how the Company has considered the DSM factor described above when modeling the use per customer (see pages 16-17 of the Company's Supplemental Volume I).
- DTE-1-25 Please refer to the Small C&I G-41 Class Firm Sales and Throughput Models (see page 20 and page 41 of the Company's Supplement Volume I). The Company states that although the retail sales variables had an insignificant t-statistic, they did have the right sign and were left in the model. In this regard, please:
- (a) discuss the consequences for the validity of the forecast of having statistically insignificant estimates of variables;
  - (b) does the Company use the estimates of retail sales variables to forecast average firm sales and throughput use per customer? Why?
  - (c) discuss how confident the Company is regarding its forecast when using statistically insignificant estimates;
  - (d) discuss why the sample size is 107 instead of 119.
- DTE-1-26 Please refer to page 40 of the Company's Supplemental Volume I. Regarding the number of C&I G-41 customers model, please:
- (a) define the variable G41CUSTOMERS[-1];
  - (b) if G41CUSTOMERS[-1] variable represents the lagged G41 number of

- customers, please perform an alternative test for testing first order serial autocorrelation;
- (c) if applicable, please correct for serial autocorrelation; and
  - (d) discuss why the sample size equals 107 instead 119.
- DTE-1-27 Please refer to page 23 of the Company's Supplemental Volume I and the C&I G-42 sales model. In this regard, please explain:
- (a) the regression equation presents a Durbin-Watson statistics of 1.373. Does that imply the presence of serial autocorrelation?
  - (b) did the Company correct the serial autocorrelation problem,? If yes, please describe the method(s) used by the Company to correct it. If not, please correct for serial autocorrelation.
- DTE-1-28 Please refer to pages 23 and 43 of the Company's Supplemental Volume I. Please explain the rationale for including the variable "employment" to explain the number of C&I G-42 customers.
- DTE-1-29 Please refer to page 44 of the Company's Supplemental Volume I and the C&I G-43 throughput model. In this regard, please explain:
- (a) the regression equation presents a Durbin-Watson statistics of 2.353. Does that imply the presence of serial autocorrelation?
  - (b) did the Company correct the serial autocorrelation problem,? If yes, please describe the method(s) used by the Company to correct it. If not, please correct for serial autocorrelation.
- DTE-1-30 Please refer to pages 29 and 47 of the Company's Supplemental Volume I. Regarding the Small Commercial G-51 Class Firm Sales and Throughput Models, please:
- (a) discuss the values taken by the binary variable "eventdum" for the unexplained spike in sales in March 1999;
  - (b) explain the origin of the spike in sales in March 1999; and
  - (c) discuss how the Company may account for potential future spikes in sales.

- DTE-1-31 Please refer to page 29 of the Company's Supplemental Volume I and the C&I G-51 sales model:
- (a) the regression equation presents a Durbin-Watson statistics of 1.489. Does that imply the presence of serial autocorrelation?
  - (b) did the Company correct the serial autocorrelation problem,? If yes, please describe the method(s) used by the Company to correct it; If not, please correct for serial autocorrelation.
- DTE-1-32 Please refer to page 46 of the Company's Supplemental Volume I and the small C&I G-51 customer model. Please explain the rationale for including the variable "number of total residential customers" as an explanatory variable.
- DTE-1-33 Please refer to pages 32 and 49 of the Company's Supplemental Volume I and the Medium Commercial G-52 Class Firm Sales and Throughput Models.
- (a) specify the different values the binary variable "eventdum" may take;
  - (b) explain the origin of the sudden drop in sales on August 98 and August 94;
  - (c) explain the negative sign of the estimate of that variable; and
  - (d) discuss how the Company may account for potential future spikes in sales.
- DTE-1-34 Please refer to page 48 of the Company's Supplemental Volume I and the C&I G-52 throughput model. Please discuss:
- (a) whether the Durbin-Watson statistics of 2.459 implies the presence of serial autocorrelation; and
  - (b) whether the Company corrected the serial autocorrelation problem. If yes, please describe the method(s) used by the Company to correct it; if not, please correct for serial autocorrelation.
- DTE-1-35 Please refer to page 35 of the Company's Supplemental Volume I and the large C&I G-53 Class Firm Sales Model:
- (a) specify the different values the binary variable "eventdum" may take;
  - (b) explain the origin of the spike in sales in November 2001;
  - (c) explain whether the Company uses a dummy variable to explain the spike in sales that occurred at the end of 1997 (see sales graph on p. 36 of the Company's Supplemental Volume I);
  - (d) discuss how the Company may account for potential future spikes in sales; and
  - (e) discuss the sample size of 46 instead of 119.
- DTE-1-36 Please refer to page 50 of the Company's Supplemental Volume I regarding the number of C&I G-53 customers model:



- (a) define the variable G53CUSTOMERS[-1];
  - (b) if G53CUSTOMERS[-1] variable represents the lagged G53 number of customers, please perform an alternative test for testing first order serial autocorrelation; and
  - (c) if applicable, please correct for serial autocorrelation.
- DTE-1-37 Please discuss how the Company forecasted both “Company Use” and “Gas Unaccounted For”. Explain how the “Company Use” and “Gas Unaccounted For” forecasts were incorporated into the current forecast and supply plan. In addition, please present a Table containing the historical (1995-2004 and projected (2005-2009) Gas Unaccounted For.
- DTE-1-38 Please refer to page 12 of the Company’s filing. The Company states that the forecast was based upon a sequential time series data set spanning from July 1994 through June 2004. In addition the Company filed its Forecast and Supply Plan with Department on January 31, 2005. In this regard, please:
- (a) discuss whether the Company uses information on the key variable during the six-month span between the end of the time series and the time of filing;
  - (b) present, on a separate table, and for the period July 2004 to December 2004, the forecast and backcast of the “number of customers” and “use per customer” for each customer class;
  - (c) discuss whether the Company uses actual migration data for all customer classes for the period July 2004 to December 2004;
  - (d) provide a Table with data on reverse migration for the period July 2004 to December 2004.
- DTE-1-39 How often does the Company plan to monitor and evaluate the forecast results with respect to the actual data?
- DTE-1-40 Please provide a Table listing each grandfathered transportation customer (by name not code), the date each customer migrated to transportation service, and the customer’s annual contract quantity.
- DTE-1-41 Please provide a Table listing each grandfathered transportation customer (by name, not code) who has returned to the Company’s sales service. For each customer, please provide the following:
- (a) The date of reverse migration;
  - (b) The associated volumes;
  - (c) Indicate whether the Company had to acquire additional capacity and/or commodity resources in order to meet the customer’s demand.

- DTE-1-42 Please present a Table containing the following information per rate class:
- (a) number of firm sales customers;
  - (b) number of firm transportation customers;
  - (c) total number of customers.
- DTE-1-43 Please refer to Attachment 2 of the Company's Supplemental Volume I regarding the total throughput tables: "number of customers-total split year" columns. Please clarify whether or not the number of customers is the correct one for each of the rate customer classes.
- DTE-1-44 Please refer to Table G-3-G-41T, Attachment 2, of the Company's Supplemental Volume I. Regarding the Company's forecast of the number of transportation G-41 customers, please:
- (a) explain how the Company forecasted the number of customers; and
  - (b) justify the assumptions underlying that forecast.
- DTE-1-45 Please refer to Table G-3-G-42T, Attachment 2, of the Company's Supplemental Volume I. Regarding the Company's forecast of the number of transportation G-42 customers, please:
- (a) explain how the Company forecasted the number of customers; and
  - (b) justify the assumptions underlying that forecast.
- DTE-1-46 Please refer to Table G-3-G-43T, Attachment 2, of the Company's Supplemental Volume I. Regarding the Company's forecast of the number of transportation G-43 customers, please:
- (a) explain how the Company forecasted the number of customers; and
  - (b) justify the assumptions underlying that forecast.
- DTE-1-47 Please refer to Table G-3-G-51T, Attachment 2, of the Company's Supplemental Volume I. Regarding the Company's forecast of the number of transportation G-51 customers, please:
- (a) explain how the Company forecasted the number of customers; and
  - (b) justify the assumptions underlying that forecast.
- DTE-1-48 Please refer to Table G-3-G-52T, Attachment 2, of the Company's Supplemental Volume I. Regarding the Company's forecast of the number of transportation G-52 customers, please:

- (a) explain how the Company forecasted the number of customers; and
  - (b) justify the assumptions underlying that forecast.
- DTE-1-49 Please refer to Table G-3-G-53T, Attachment 2, of the Company's Supplemental Volume I. Regarding the Company's forecast of the number of transportation G-53 customers, please:
  - (a) explain how the Company forecasted the number of customers; and
  - (b) justify the assumptions underlying that forecast.
- DTE-1-50 Please provide,
  - (a) a Table with "Reverse" Migration by number of customers, total volume and customer type occurred from February 2002 to present;
  - (b) a forecast of reverse migration by number of customers, total volume and customer type over the forecasted period.
- DTE-1-51 Please provide a Table with the following information on interruptible sales and interruptible transportation customers. If a customer is an interruptible sales customer, please provide the information separately for the sales and transportation components. Please identify customers by name, and not code:
  - (a) Name of customer
  - (b) Date contract was entered into
  - (c) Date contract was approved by the Department (if applicable)
  - (d) MDCQ/MDTQ
  - (e) Per unit rate
- DTE-1-52 Regarding the Company's Load management Rate, please provide a Table with the following information:
  - (a) Name of customer (actual name, not code);
  - (b) Volumes by which customer will reduce consumption
- DTE-1-53 Please explain how the Company forecasts the interruptible sales for the corresponding forecast period.
- DTE-1-54 Using the forecasting model presented in the Company's Supplemental Volume I, please:
  - (a) present a table with the following information: annual backcast of total throughput and backcast of throughput per each of the customer class for the period 1999-2000 to 2003-2004;
  - (b) compute the total and annual percentage differences between actual and backcasted;

- (c) discuss and evaluate the results obtained above in terms of the predictive ability of the model.
- DTE-1-55 Using the forecasting model presented in the Company's Supplemental Volume I, please:
- (a) present a table with the following information: annual backcast of total firm sales and backcast of firm sales per each of the customer class for the period 1999-2000 to 2003-2004;
  - (b) compute the total and annual percentage differences between actual and backcasted;
  - (c) discuss and evaluate the results obtained above in terms of the predictive ability of the model.
- DTE-1-56 Please refer to page 9 of the Company's Supplemental Volume I. The Company states that the data set of historical and projected regional demographic and economic indicators was purchased from Economy.com. Please:
- (a) discuss the methodology used to forecast each exogenous variable used in the final specification of the econometric models; and
  - (b) discuss how confident the Company is that those forecasts are accurate. Please provide a measure of predictive ability (e.g., backcast).
- DTE-1-57 Please justify why the Company did not perform a low-case and high-case scenarios forecast.
- DTE-1-58 Please refer to page 55 of the Company's Supplemental Volume I. Please:
- (a) explain and justify the use of HDD instead of EDD to derive the design year forecast;
  - (b) explain how the Company forecasted demand under the design year conditions;
  - (c) explain why the Company needed to adjust the HDD data by rate class to reflect billing cycles; and
  - (d) discuss what the impact on the forecast would have been if no billing cycle adjustments by rate class would have been made.
- DTE-1-59 Please refer to pages 11 and 63 of the Company's Supplemental Volume I. The Company states that the use of Albany wind speed data will add some level of inaccuracy to the EDD variable and thus, the Company has used HDD data in its forecast models except for the design day forecast models. Please fully discuss why the Company used EDD to forecast design day demand if EDD data are inaccurate?

- DTE-1-60 Please refer to page 63 of the Company's Supplemental Volume I. It states that the first step in the design day analysis was to develop regression models for daily system sendout. In this regard, please:
- (a) specify the econometric procedure and software used in the estimation of the daily system sendout models; and
  - (b) specify the values taken by the binary variables used in those models.
- DTE-1-61 Please refer to page 63 of the Company's Supplemental Volume I and to the "Forecast Model for 1999/2000 Daily Sendout:
- (a) discuss the use of a sample size of 108 when the model includes daily sendout for the months of December through March;
  - (b) discuss why the binary variable "December" is kept in the model while its estimate is not statistically significant. Is the Company using that variable in the following steps of the design day analysis? Please, discuss.
- DTE-1-62 Please refer to pages 64-65 of the Company's Supplemental Volume I and to the "Forecast Models for 2001/02 and for 2002/03 Daily Sendout . Discuss why the Company used the sample sizes of 108 and 112, respectively.
- DTE-1-63 Please refer to page 63 of the Company's Supplemental Volume I. The Company states that the first step in the design day analysis was to develop individual models for the past five split years 1999/2000 through 2003/04. Please discuss why the Company selected five years. Does the Company believe that five years is the optimum number models? Why?
- DTE-1-64 Please refer to page 66 of the Company's Supplemental Volume I. Discuss the rationale for computing the average forecast error (design day adjustment factor) of the daily sendout using the seven coldest days of every year. Does the Company maintain that the forecast error would be different if the Company used the five coldest days ?
- DTE-1-65 Please, refer to page 66 of the Company's Supplemental Volume I. It states that all the daily sendout data included a load management customer and that the design day estimate was reduced by the load management customer. In this regard, please:
- (a) define "Load management customer"; and
  - (b) explain why the Company assumes a constant load management customer through the forecast period. Please provide all relevant back-up materials.

- DTE-1-66 Please refer to page 71 of the Company's Supplemental Volume I. Please explain the following sentence: "The Company used the 2003/04 model since in January 2004 there was a cold snap that was withing 95 percent of MAC's design cold snap."
- DTE-1-67 How often and by whom, are forecast and supply plans reviewed prior to their submission to the Department?
- DTE-1-68 Please describe the level of training, technical competence, and industry experience of each Company employee who was directly involved in the formulation of the Company's forecast and supply plan.